PLANS FOR CONSTRUCTION OF:

FREEZEOUT LAKE WMA COLD STORAGE BUILDING (REBID)

NEAR FAIRFIELD, MONTANA
FWP PROJECT #7179102

SHEET INDEX

CIVIL SITE DESIGN BY:

LARSON CIVIL ENGINEERING, LLC

ELECTRICAL DESIGN BY:

AMES ENGINEERING

ARCHITECTURAL REVIEW BY:

SLATE ARCHITECTURE

CODE ANALYSIS

CODES:

BUILDING: 2012 INTERNATIONAL BUILDING CODE (IBC)
MECHANICAL: 2012 INTERNATIONAL MECHANICAL CODE (IMC)
PLUMBING: 2012 UNIFORM PLUMBING CODE (IAMPO)
ELECTRICAL: 2014 NATIONAL ELECTRICAL CODE (NEC)
FIRE: 2012 INTERNATIONAL FIRE CODE
ENERGY: 2012 INTERNATIONAL ENERGY CONSERVATION CODE (IECC)
ACCESSIBILITY: ANSI 117.1

BUILDING AREA:

TOTAL BUILDING AREA: 2,400 S.F

OCCUPANCY: IBC SECT. 311

"S-1" OCCUPANCY

CONSTRUCTION TYPE: IBC TABLE 601 TYPE V-B

PERMITTED: 9,000 SF/FLR (TABLE 503)
ACTUAL AREA: 2,400 SF

OCCUPANCY SEPARATION: IBC TABLE 508.4

NA

LOCATION ON PROPERTY:

+30' OPEN SPACE

FIRE RESISTANCE: IBC TABLE 601

	PERMITTED:
STRUCTURAL FRAME	NONE REQUIRED
EXTERIOR BEARING WALLS	
INTERIOR BEARING WALLS	
EXTERIOR NONBEARING WALLS	
INTERIOR NONBEARING WALLS	
FLOOR CONSTRUCTION	
ROOF CONSTRUCTION	

EXTERIOR WALL PROTECTION: IBC TABLE 602

NONE REQUIRED

FLAME SPREAD: IBC TABLE 803.9

EXIT ENCLOSURE & PASSAGEWAYS	B
CORRIDORS	B
ROOMS AND ENCLOSED SPACES	C

AUTOMATIC SPRINKLER SYSTEM: IBC SECTION 903

NONE

EXITS: IBC TABLE 1004.1.1

OCCUPANT LOAD:
WAREHOUSES: 500 S.F. PER OCCUPANT

OCCUPANT LOAD (NEW): 4

EXIT CALCULATION: IBC CH. 10 - TABLE 1015.1

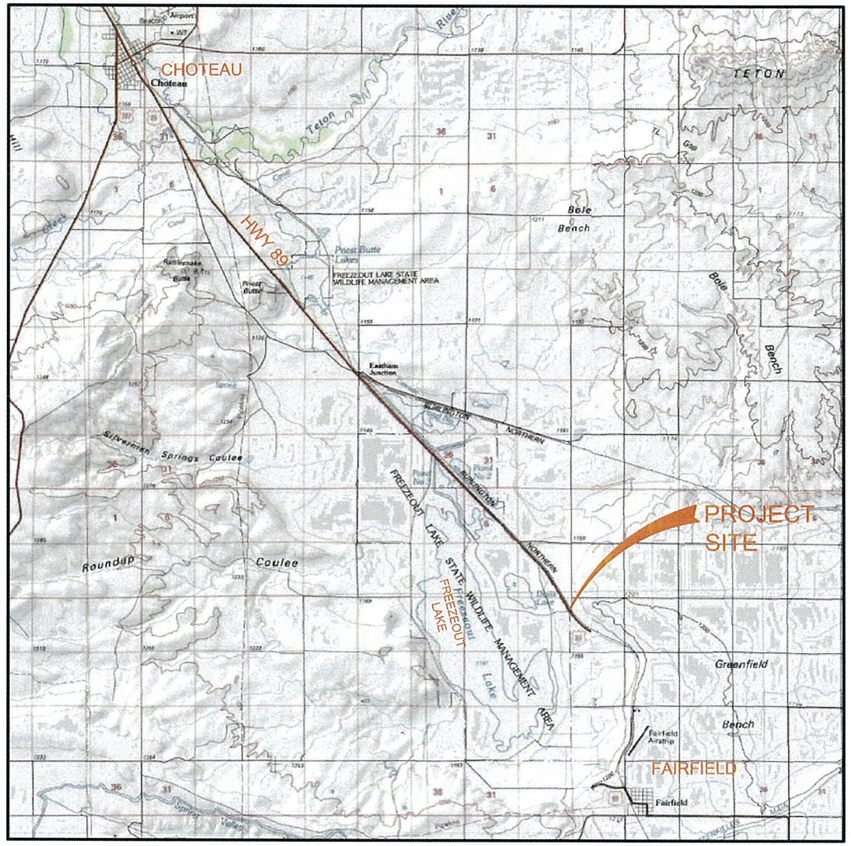
2 EXITS PROVIDED

DISTANCE TO EXITS: IBC SECTION 1016

200 FT. MAX.; LESS THAN 200 FT. PROVIDED

ROOF CONSTRUCTION: IBC TABLE 1505.1

CLASS C - MINIMUM CLASSIFICATION



VICINITY MAP

LICENSED ARCHITECT
SCOTT W. CROMWELL
NO. 2551
HELENA, MT
5/9/2018
STATE OF MONTANA

ARCHITECTURAL REVIEW AND SPECIFICATIONS ONLY

MONTANA
JEFFREY L. LARSON
9455 P.E.
5-7-18
REGISTERED PROFESSIONAL ENGINEER

J. LARSON MAY 7, 2018			
DRAWN BY: DATE:	REVISED BY: DATE:	APPROVED BY: DATE:	Montana Fish, Wildlife & Parks
J. LARSON MAY 7, 2018	J. LARSON MAY 7, 2018		
CHECKED BY: DATE:	APPROVED BY: DATE:	APPROVED BY: DATE:	

TITLE SHEET
FREEZEOUT LAKE WMA COLD STORAGE BUILDING (REBID)
FWP #7179102

LARSON CIVIL ENGINEERING, LLC
28 ANTLER AVENUE
CLANCY, MT 59634
406-443-6111
jeff@larsonce.com

SHEET: T1

0 7.5 15 30

1 inch = 30 ft.

CP2 ON NORTH SIDE OF ENTRANCE ROAD

LEGEND

EXISTING FEATURES

- BUILDING
- SIDEWALK
- UGP — UNDERGROUND ELECTRICAL POWER
- G — IRRIGATION PIPING
- BOLLARD
- LIGHT POLE

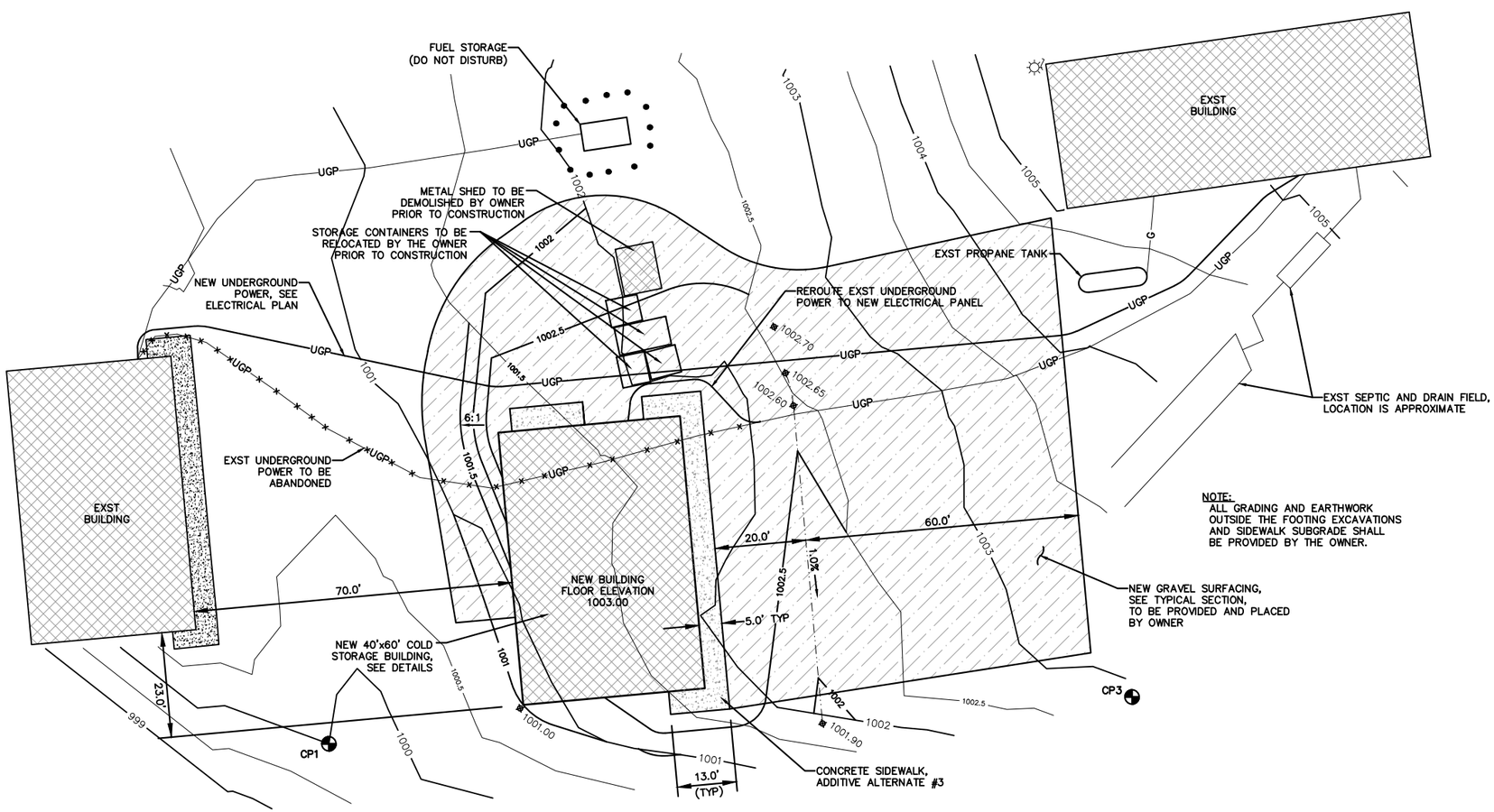
PROPOSED FEATURES

- BUILDING
- GRAVEL SUIRFACING
- SIDEWALK
- SPOT ELEVATION 1000.82

CONTROL POINT TABLE

POINT	NORTHING	EASTING	ELEVATION	DESCRIPTION
CP1	5,000.00	5,000.00	1,000.00	IRON PIN
CP2	4,859.44	4,905.73	1,001.01	IRON PIN
CP3	4,947.37	4,875.45	998.88	IRON PIN

ASSUMED DATUM



NOTE:
ALL GRADING AND EARTHWORK OUTSIDE THE FOOTING EXCAVATIONS AND SIDEWALK SUBGRADE SHALL BE PROVIDED BY THE OWNER.

MONTANA
JEFFREY L. LARSON
9455 P.E.
REGISTERED PROFESSIONAL ENGINEER
5-7-18

J. LARSON	MAY 7, 2018				
DRAWN BY:	DATE:	REVISED BY:	DATE:	APPROVED BY:	DATE:
J. LARSON	MAY 7, 2018	J. LARSON	MAY 7, 2018		
CHECKED BY:	DATE:	APPROVED BY:	DATE:	APPROVED BY:	DATE:

Montana Fish, Wildlife & Parks

160

SITE PLAN

FREEZEOUT LAKE WMA COLD STORAGE BUILDING (REBID)
FWP #7179102

LARSON CIVIL ENGINEERING, LLC
28 ANTLER AVENUE
CLANCY, MT 59634
406-443-6111
jeff@larsonce.com

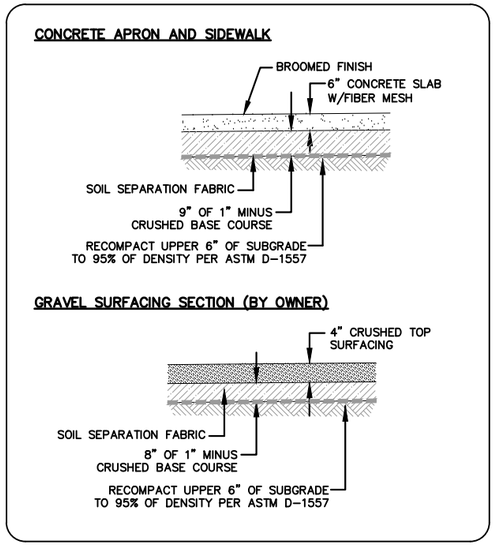
SHEET: C1

CONSTRUCTION NOTES:

1. ALL WORK SHALL BE CONSTRUCTED IN ACCORDANCE WITH "MONTANA PUBLIC WORKS STANDARD SPECIFICATIONS", SIXTH EDITION (MPW).
2. BEFORE DIGGING, CALL 811 FOR LOCATION OF EXISTING UTILITIES.
3. CRUSHED BASE COURSE SHALL BE 1" MINUS PER MPW SPECIFICATIONS.
4. CONCRETE SLABS AND SIDEWALK SHALL BE REINFORCED WITH FIBER MESH.
5. CRUSHED TOP SURFACING FOR GRAVEL SURFACING SHALL MEET THE FOLLOWING SPECIFICATIONS INCLUDING BINDER OR BLENDING MATERIAL:

SIEVE SIZE	% PASSING
3/4" SIEVE	100%
No. 4 SIEVE	40–80%
No. 10 SIEVE	25–60%
No. 200 SIEVE	8–20%

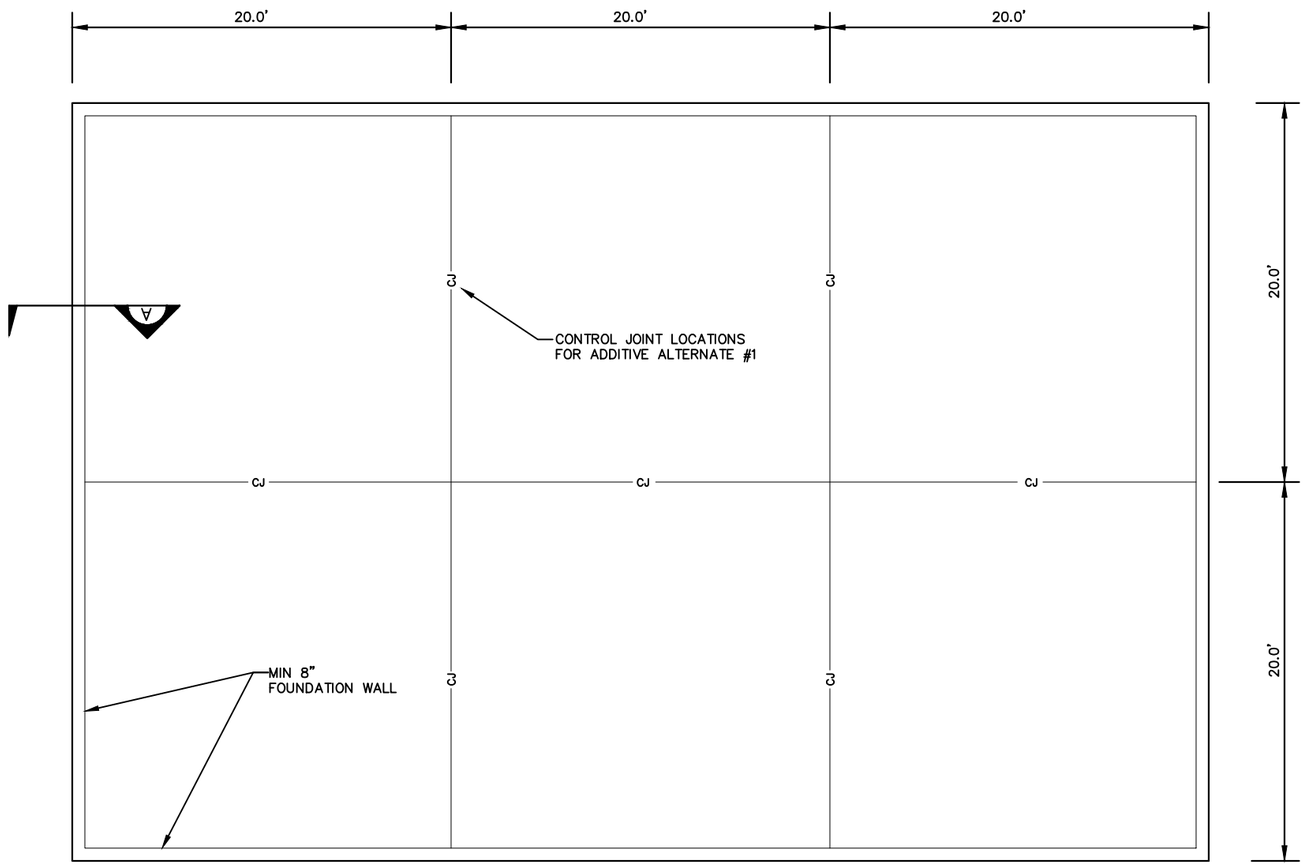
   IN ADDITION, THE PORTION PASSING THE NO. 200 SIEVE CANNOT EXCEED 2/3 OF THE PORTION PASSING THE #40 SIEVE; THE MAXIMUM LIQUID LIMIT FOR THE MATERIAL PASSING THE NO. 40 SIEVE SHALL NOT EXCEED 35, WHILE THE PLASTICITY INDEX CAN VARY BETWEEN 3 AND 10; THE WEAR FACTOR SHALL NOT EXCEED 50% AT 500 REVOLUTIONS; AND AT LEAST 20% OF THE AGGREGATE RETAINED ON NO. 4 SIEVE SHALL HAVE A FRACTURED FACE.
6. CRUSHED TOP SURFACE SHALL BE PLACED AND COMPACTED AS IDENTIFIED IN MPW SPECIFICATION 02/235 CRUSHED BASE COURSE.
7. ALL EXCAVATION AND EMBANKMENT ON THIS PROJECT, SHALL MEET THE REQUIREMENTS OF MPW SPECIFICATION 02/230 STREET EXCAVATION, BACKFILL AND COMPACTION.
8. CONCRETE SHALL BE M–4000 PER MPW SPECIFICATIONS. ALL REBAR #4 AND LARGER SHALL BE ASTM GRADE 60, #3 REBAR SHALL BE ASTM GRADE 40.
9. ALL HOLES DRILLED IN CONCRETE FOR BOLT EMBEDS SHALL BE THOROUGHLY CLEANED OF DUST BY BLOWING OUT THE HOLE WITH AN AIR COMPRESSOR.
10. COMPACTION AND CONCRETE TESTING SHALL BE PERFORMED IN ACCORDANCE WITH THE MPW SPECIFICATIONS BY AN INDEPENDENT LABORATORY HIRED BY THE CONTRACTOR. SUBMIT RESULT TO BOTH OWNER AND ENGINEER. PROVIDE TESTING AS INDICATED IN THE FOLLOWING SCHEDULE:
    - –ONE TEST EACH FOR SUBGRADE AND GRAVEL AT EACH FOOTING, OR EVERY 50' FOR LINEAR FOOTINGS.
    - –SUBGRADE FOR SIDEWALK, BUILDING SLAB AND BUILDING GRAVEL ONE TEST PER 400 SF.
    - –GRAVEL FOR BUILDING GRAVEL, SIDEWALK AND BASE UNDER SLAB ONE TEST PER 400 SF.
11. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING DETAILED DRAWINGS AND STRUCTURAL CALCULATIONS FOR THE BUILDING AND FOUNDATION. DRAWINGS AND CALCULATIONS SHALL BE STAMPED BY A PROFESSIONAL ENGINEER LICENSED IN MONTANA.
12. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING A BUILDING PERMIT FROM THE STATE OF MONTANA. THE COST OF THE PERMIT SHALL BE PAID BY THE CONTRACTOR AND SHALL BE INCLUDED IN THE CONTRACTORS BID.
13. PROVIDE ONE FIRE EXTINGUISHER AND CABINET AS SPECIFIED. LOCATION TO BE DETERMINED BY OWNER.
14. IMPORT BACKFILL MATERIAL CAN BE OBTAINED FROM A STATE OWNED PIT IN NE 1/4 OF SECTION 3, TOWNSHIP 22 NORTH, RANGE 3 WEST. THE MATERIAL IS SIMILAR TO 3" MINUS PIT RUN. ANY EXCESS SPOIL MATERIAL CAN BE DISPOSED OF AT THE PIT.
15. SOIL SEPARATION FABRIC SHALL BE NON–WOVEN POLYPROPYLENE GEOTEXTILE THAT IS INERT TO BIOLOGICAL DEGRADATION AND RESISTANT TO NATURALLY OCCURRING CHEMICALS, ALKALIS AND ACIDS. SOIL SEPARATION FABRIC SHALL HAVE AN TENSILE STRENGTH (GRAB) OF 160 LBS AND SHALL BE GEOTEX 601 OR APPROVED EQUAL.
16. METAL BUILDING SYSTEMS SHALL BE ACCEPTED AS A SUBSTITUTION TO THE POST AND FRAME BUILDING SYSTEMS SHOWN IN THE DRAWINGS. SEE TECHNICAL SPECIFICATION 13 3419 METAL BUILDING SYSTEM.



SURFACING SECTIONS
NO SCALE

J. LARSON MAY 7, 2018	REVISED BY: DATE:	APPROVED BY: DATE:	Montana Fish, Wildlife & Parks	NOTES AND DETAILS FREEZEOUT LAKE WMA COLD STORAGE BUILDING (REBID) FWP #7179102	SHEET: C2
DRAWN BY: DATE:	J. LARSON MAY 7, 2018				
J. LARSON MAY 7, 2018	APPROVED BY: DATE:	APPROVED BY: DATE:			
CHECKED BY: DATE:					

LARSON CIVIL ENGINEERING, LLC
28 ANTLER AVENUE
CLANCY, MT 59634
406–443–6111
jeff@larsonce.com



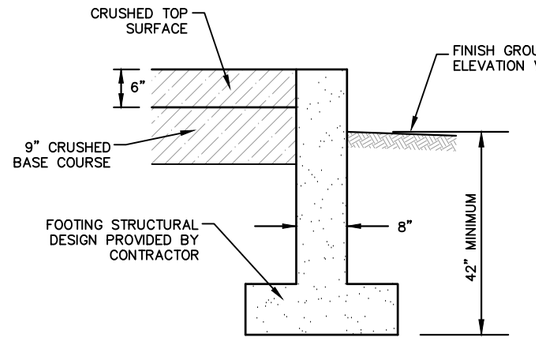
FOUNDATION PLAN
SCALE 1/8"= 1'-0"

KEY:

—— CJ —— CONSTRUCTION JOINTS SAW CUT TO 1-1/2" DEPTH IN SLAB

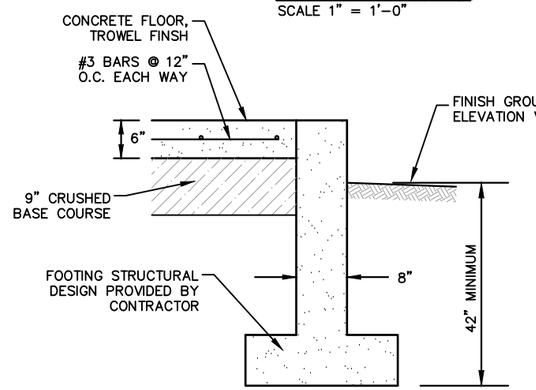
FOOTING AND FOUNDATION NOTES:

1. THE STRUCTURAL DESIGN OF FOUNDATIONS AND FOOTINGS IS THE RESPONSIBILITY OF THE CONTRACTOR. DETAILS AND CALCULATIONS STAMPED BY A PROFESSIONAL ENGINEER SHALL BE SUBMITTED FOR REVIEW PRIOR TO ORDERING THE BUILDING PACKAGE.
2. FOOTINGS AND FOUNDATION ARE TO BE CONCRETE CONSTRUCTION. COLUMNS SHALL NOT EXTEND BELOW FLOOR ELEVATION.
3. FOOTINGS SHALL BE DESIGNED TO BE INDEPENDENT OF THE FLOOR SLAB.
4. SOIL BEARING CAPACITY FOR FOOTING DESIGN IS 2,000 PSF.
5. A MODULUS OF SUBGRADE REACTION, k, OF 150 PSI MAY BE USED FOR THE SLAB DESIGN.



NOTES:
1. THIS DETAIL IS TYPICAL ALONG ALL EDGES OF THE BUILDING SLAB
2. THIS DETAIL IS THE MINIMUM SECTION ALLOWED. IF THE STRUCTURAL DESIGN REQUIRES A LARGER DIMENSIONS, THE STRUCTURAL DESIGN SHALL SUPERCEDED THIS DETAIL.
3. FOOTING ELEVATION MAY BE STEPPED TO MATCH FINISH GROUND ELEVATION AROUND THE BUILDING. MAINTAIN 42" OF COVER IN ALL LOCATIONS.

SECTION A
SCALE 1" = 1'-0"



NOTES:
1. THIS DETAIL IS TYPICAL ALONG ALL EDGES OF THE BUILDING SLAB
2. THIS DETAIL IS THE MINIMUM SECTION ALLOWED. IF THE STRUCTURAL DESIGN REQUIRES A LARGER DIMENSIONS, THE STRUCTURAL DESIGN SHALL SUPERCEDED THIS DETAIL.
3. FOOTING ELEVATION MAY BE STEPPED TO MATCH FINISH GROUND ELEVATION AROUND THE BUILDING. MAINTAIN 42" OF COVER IN ALL LOCATIONS.

SECTION (ADDITIVE ALTERNATE #2) A
SCALE 1" = 1'-0"

MONTANA
JEFFREY L. LARSON
9455 P.E.
REGISTERED PROFESSIONAL ENGINEER
5-7-18

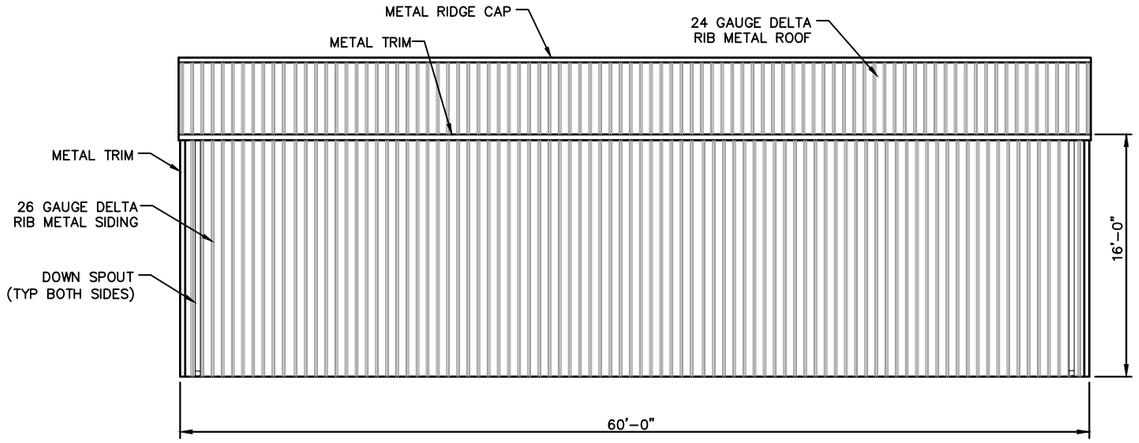
J. LARSON DRAWN BY:	MAY 7, 2018 DATE:	REVISED BY:	DATE:	APPROVED BY:	DATE:
J. LARSON CHECKED BY:	MAY 7, 2018 DATE:	J. LARSON APPROVED BY:	MAY 7, 2018 DATE:	APPROVED BY:	DATE:

Montana Fish, Wildlife & Parks

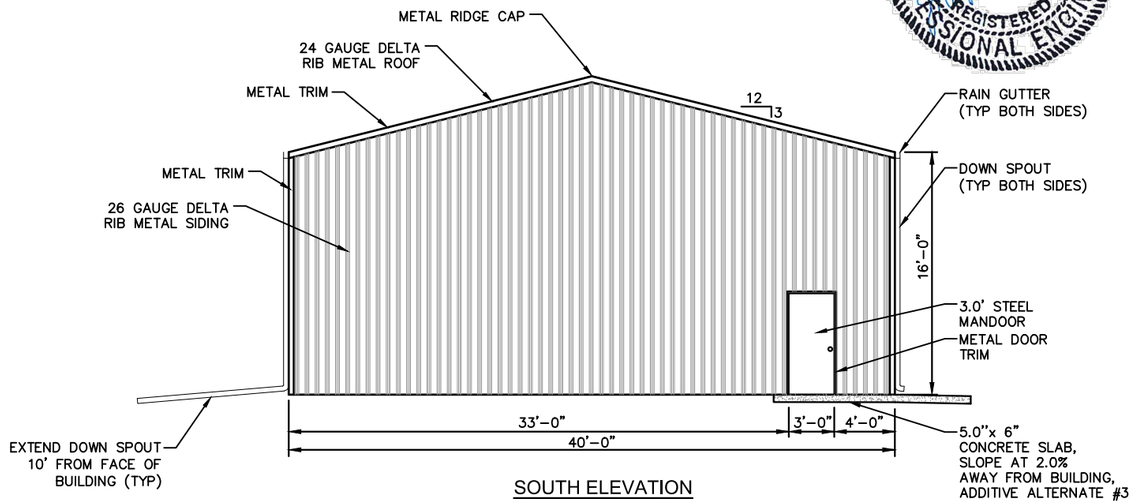
BUILDING FOUNDATION PLAN
FREEZEOUT LAKE WMA COLD STORAGE BUILDING (REBID)
FWP #7179102

LARSON CIVIL ENGINEERING, LLC
28 ANTLER AVENUE
CLANCY, MT 59634
406-443-6111
jeff@larsonce.com

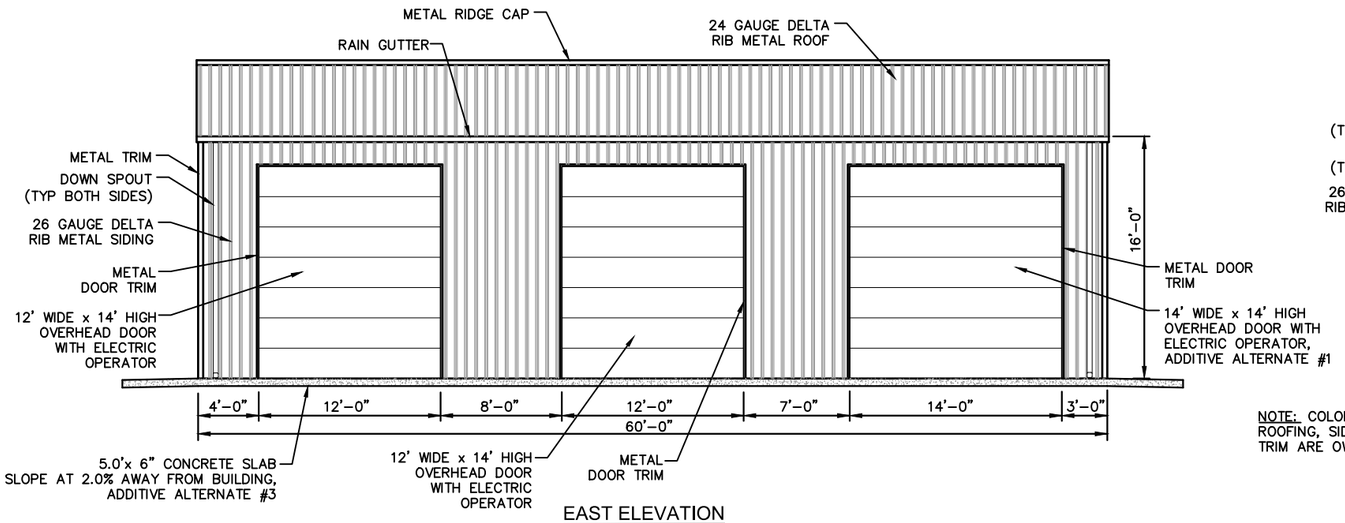
SHEET: C3



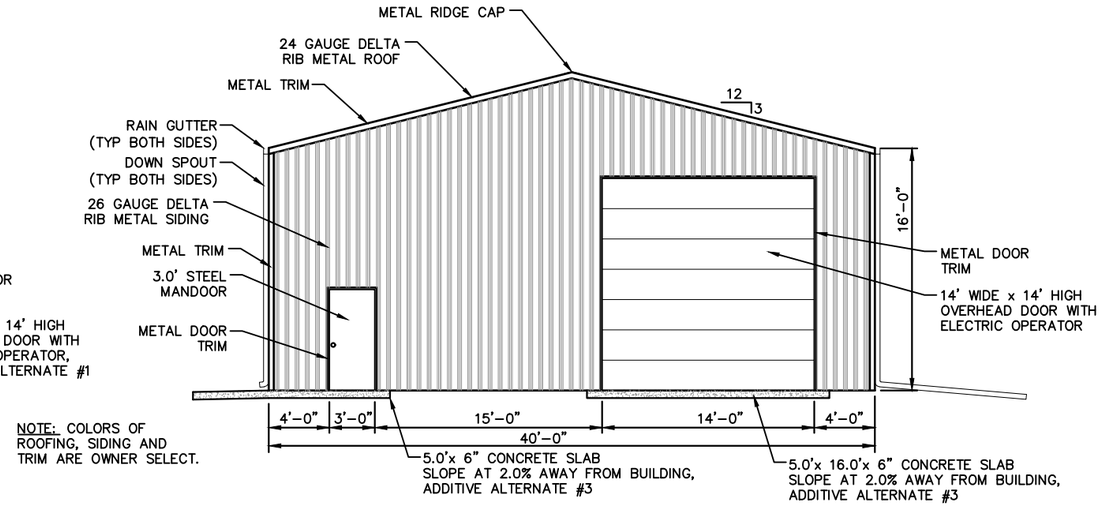
WEST ELEVATION



SOUTH ELEVATION



EAST ELEVATION



NOTE: COLORS OF ROOFING, SIDING AND TRIM ARE OWNER SELECT.

NORTH ELEVATION

BUILDING ELEVATIONS

SCALE 1"= 10'-0"

MONTANA
JEFFREY L. LARSON 9455 P.E.
REGISTERED PROFESSIONAL ENGINEER
5-7-18

J. LARSON	MAY 7, 2018	REVISED BY:	DATE:	APPROVED BY:	DATE:
DRAWN BY:	DATE:	J. LARSON	MAY 7, 2018		
J. LARSON	MAY 7, 2018	APPROVED BY:	DATE:	APPROVED BY:	DATE:
CHECKED BY:	DATE:				

Montana Fish, Wildlife & Parks

BUILDING ELEVATIONS

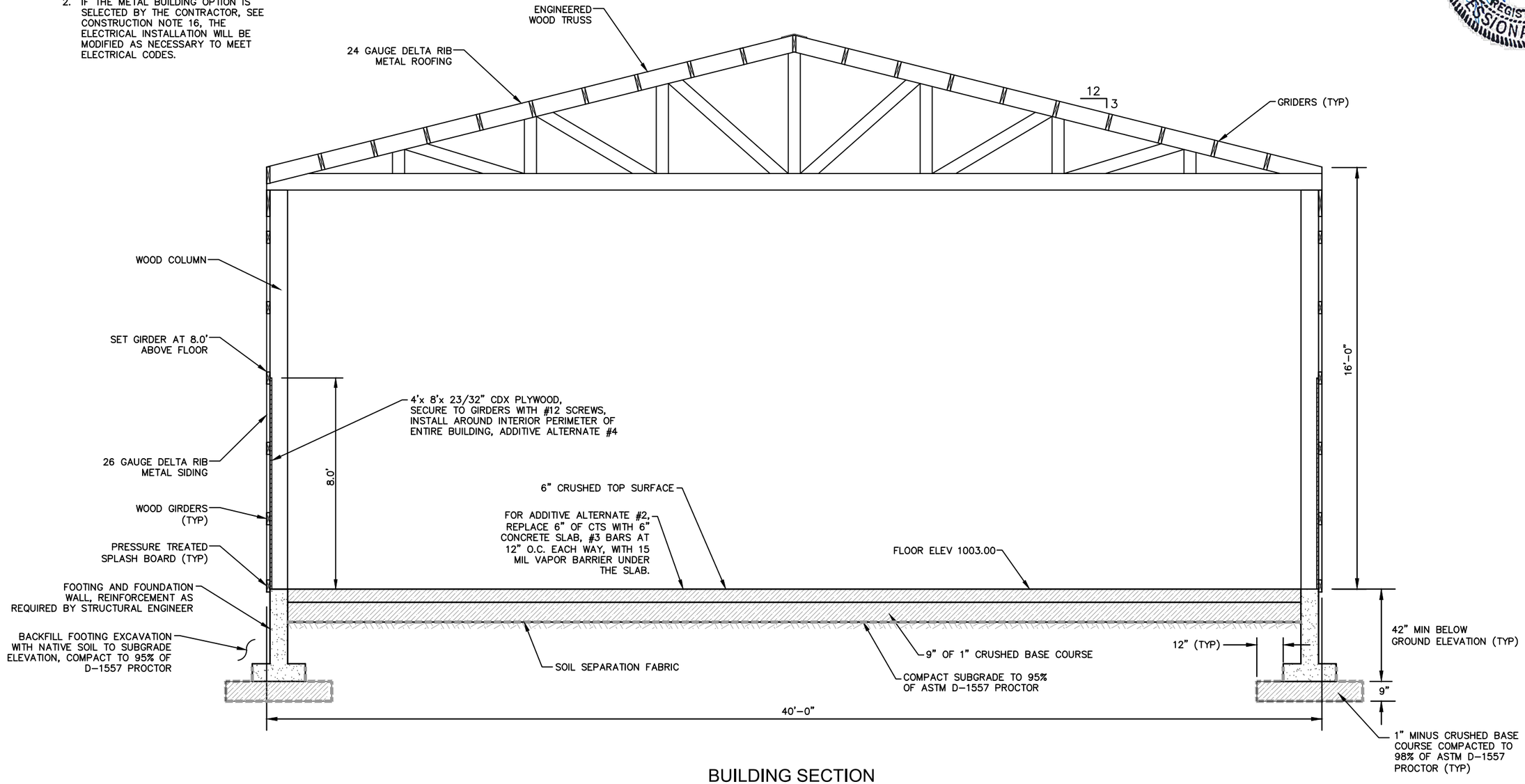
FREEZEOUT LAKE WMA COLD STORAGE BUILDING

FWP #7179102

LARSON CIVIL ENGINEERING, LLC
28 ANTLER AVENUE
CLANCY, MT 59634
406-443-6111
jeff@larsonce.com

SHEET: C4

NOTE:
1. THE LOCATION, SIZE AND SPACING OF FRAMING MEMBERS AND GIRDERS MAY BE ADJUSTED AS REQUIRED TO MEET THE STRUCTURAL REQUIREMENTS OF BUILDING DESIGN.
2. IF THE METAL BUILDING OPTION IS SELECTED BY THE CONTRACTOR, SEE CONSTRUCTION NOTE 16, THE ELECTRICAL INSTALLATION WILL BE MODIFIED AS NECESSARY TO MEET ELECTRICAL CODES.

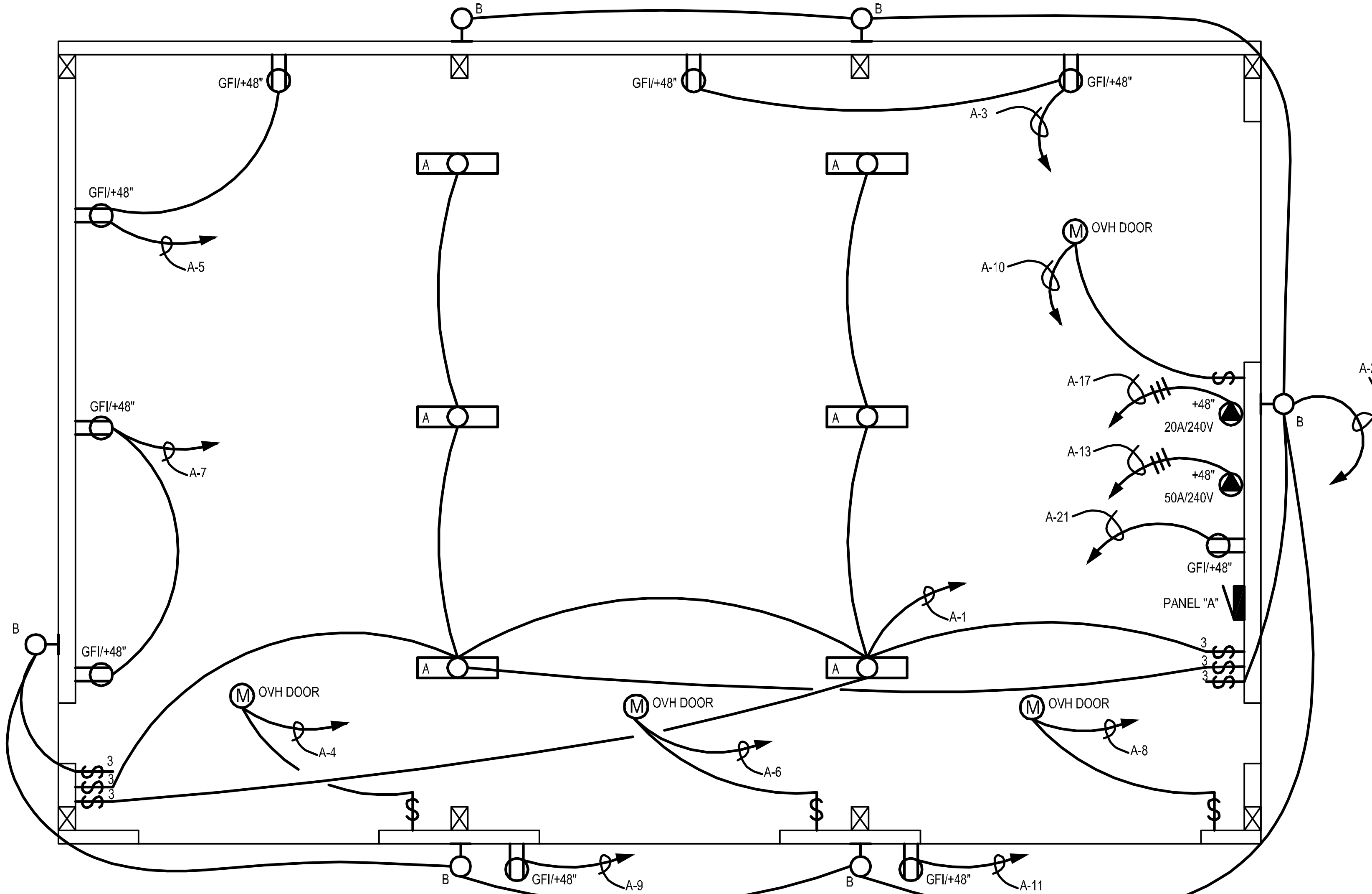


BUILDING SECTION
NO SCALE

MONTANA
JEFFREY L. LARSON
9455 P.E.
5-7-18
REGISTERED PROFESSIONAL ENGINEER

J. LARSON MAY 7, 2018					
DRAWN BY: DATE:	REVISED BY: DATE:	APPROVED BY: DATE:	Montana Fish, Wildlife & Parks	BUILDING SECTION	SHEET: C5
J. LARSON MAY 7, 2018	J. LARSON MAY 7, 2018			FREEZEOUT LAKE WMA COLD STORAGE BUILDING (REBID)	
CHECKED BY: DATE:	APPROVED BY: DATE:	APPROVED BY: DATE:		FWP #7179102	

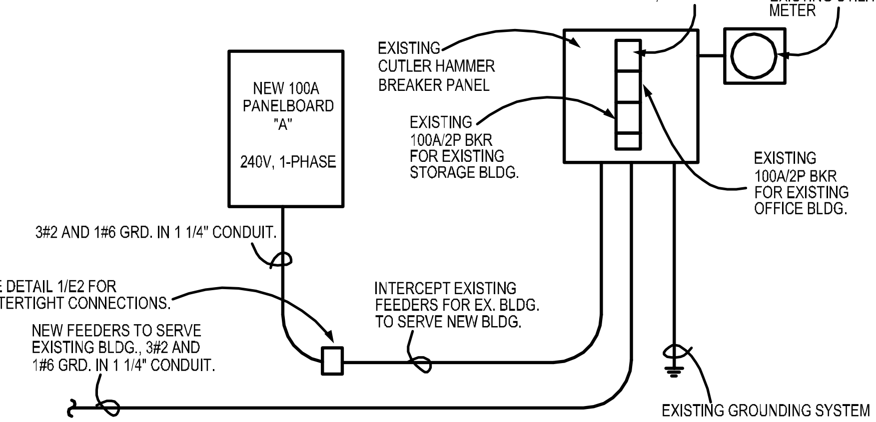
LARSON CIVIL ENGINEERING, LLC
28 ANTLER AVENUE
CLANCY, MT 59634
406-443-6111
jeff@larsonce.com



STORAGE BUILDING ELECTRICAL PLAN

1 / E1 — NORTH

1/8"=1'-0"



REVISED RISER DIAGRAM

2 / E1

NO SCALE

PANEL	A	AMPS	100A	BUS	100A	MOUNT	SURFACE
LOC.	BLDG	L-L V	240	NEUT	100A	FEED	BOTTOM
MFGR.	SQUARE D	L-N V	120	M.C.B.	100A	WIDTH	20"
TYPE	NQOD	PHASE	1	TYPE		DEPTH	5.75"
AIC	10K	WIRES	3	M.L.O.		NEMA	1

NOTES: FED FROM 100A/2P BREAKER IN EXISTING METER/MAIN ON OFFICE BUILDING

REMARKS : BOLT-ON BREAKERS ONLY, HACR BREAKERS WHERE REQUIRED BY HVAC UNIT MANUFACTURER
*ALL CIRCUIT BREAKERS SHALL BE RATED 10,000 AIC AND LISTED FOR SERIES COMBINATION WITH THE CURRENT LIMITING MAIN FUSES OR CIRCUIT BREAKERS.

CKT NO.	BREAKER AMP	POLE	T	WIRE	LOAD DESCRIPTION	USE REC	LTS	HTR	MTR	MISC	LOAD(VA) L1	L2	USE REC	LTS	HTR	MTR	MISC	LOAD DESCRIPTION	WIRE	BREAKER AMP	POLE	T	CKT NO.
1	20	1		#12	LIGHTS		1				270												
											120			1				EXTERIOR LTS	#12	20	1		2
3	20	1		#12	RECEPTS	1						360											
												850				1		OVH DOOR	#12	20	1		4
5	20	1	G	#12	RECEPTS	1					360												
											850					1		OVH DOOR	#12	20	1		6
7	20	1		#12	RECEPTS		1					360											
												850				1		OVH DOOR	#12	20	1		8
9	20	1		#12	RECEPTS	1					180												
											850					1		OVH DOOR	#12	20	1		10
11	20	1		#12	RECEPTS	1						180											
																		SPARE		20	1		12
13	20	1		#12	RECEPTS	1					180												
																		SPARE		20	1		14
15	20	1			SPARE																		
																		SPARE		20	1		16
17	20	2		#12	AIR COMP				1		1000												
																		SPARE		20	1		18
19									1			1000											
																		PROVISION					20
21	50	2		#6	EQUIPMENT				1		3000												
																		PROVISION					22
23									1			3000											
																		PROVISION					24
											6810	6600											

TOTAL CONNECTED LOAD 13410 VA

LOAD/PHASE: 51% A, 49% B

BREAKER TYPES
N = NORMAL
S = SHUNT-TRIP
G = GFCI

CONNECTED LOAD			DIV.	DEMAND
REC 1ST 10KVA	1.3	KVA	100%	1.3 KVA
REC REMAINING		KVA	50%	0.0 KVA
LIGHTING	0.8	KVA	125%	0.8 KVA
RES HEAT		KVA	125%	0.0 KVA
MOTORS	11.4	KVA	100%	11.4 KVA
MISCELLANEOUS		KVA	25%	0.0 KVA
TOTAL DEMAND LOAD				13.4 KVA
DEMAND AMPS				55.9 AMPS

LIGHT FIXTURE SCHEDULE

LTR.	SYMBOL	DESCRIPTION	MANUFACTURER	CATALOG NO.	LOCATION	MOUNTING	LAMPS / CAT. NO.	NOTES
A		1'X4' SURFACE MTD, LENSED GASKETED FIXTURE LED LAMPING	LITHONIA	FEM-L48-6000LM LPACL-MD-40K	CEILING	SURFACE	45W LED	(1) 120V
B		EXTERIOR FLOOD LIGHT 2-HEADS WITH PHOTOCELL LED LAMPS	LITHONIA	OFLR-6LC 120-P-BZ	WALL	WALL 8' AFF	20W LED	(2) 120V

NOTES:
1. EQUIVALENT FIXTURES FROM THE FOLLOWING MANUFACTURERS ARE ACCEPTED AS EQUALS: ILP, LSI, HE WILLIAMS
2. EQUIVALENT FIXTURES FROM THE FOLLOWING MANUFACTURERS ARE ACCEPTED AS EQUALS: HUBBELL, MAXIMUS, WF HARRIS (LED ONLY)

ELECTRICAL LEGEND

- PANEL OR LOAD CENTER
- HOME RUN TO PANEL, NO. OF ARROWS INDICATES NO. OF CIRCUITS.
- NO. OF HASH MARKS INDICATES NO. OF CONDUCTORS IN CONDUIT. NO HASH MARKS INDICATES TWO CONDUCTORS-GROUND CONDUCTORS ARE NOT INCLUDED IN WIRE COUNT.
- LIGHT FIXTURE, CEILING MOUNT
- LIGHT FIXTURES, WALL MOUNTED
- $ SWITCH, SPST
- OUTLET, DUPLEX
- GFI OUTLET, GROUND FAULT INTERRUPTER
- SPECIAL CONNECTION
- GFI GROUND FAULT INTERRUPTER
- HP HORSE POWER

MONTANA ★ SUSAN H. AMES 16872P.E. ★ LICENSED PROFESSIONAL ENGINEER

S. AMES — DRAWN BY:	MAY 07, 2018 — DATE:
S. AMES — CHECKED BY:	MAY 07, 2018 — DATE:
REVISED BY:	DATE:
S. AMES — APPROVED BY:	MAY 07, 2018 — DATE:
APPROVED BY:	DATE:
APPROVED BY:	DATE:

Montana Fish, Wildlife & Parks

ELECTRICAL PLAN

FREEZEOUT LAKE WMA COLD STORAGE BUILDING
FWP #7179102

AMES ENGINEERING, LLC
815 JADE STREET
HELENA, MT 59602
PHONE/FAX: (406) 458-0494
E-MAIL: susanhames@mt.net

SHEET: E1

Electrical Specifications

Scope: All electrical work under this contract as shown on the plans and indicated in the specifications. Work shall be performed by a licensed and bonded contractor utilizing tradesmen skilled in the art and in accordance with acceptable practices. All work shall comply with local, state, and the National Electrical Code, latest edition.

Permits: The electrical contractor shall secure all permits in connection with his work.

Work Included: All lighting and power systems including fixtures, devices, boxes, conduit, disconnects, motor starters, etc. Provide and install all incidental items required for a complete and functioning system. Service equipment, motors, etc. to be located and installed as shown on the plan. Deviations shall be approved prior to installation by the architect and/or engineer.

Tests: Prior to tests or usage, all switches, panels, devices shall be in place. All branch circuits shall be free of faults or shorts. The complete installation and all components shall have a resistance between conductors and between conductors and ground as specified by the N.E.C.

Ground: There shall be continuity of ground throughout the system. System ground to comply with N.E.C. requirements.

Materials: All materials such as receptacles, switches, conduit, conductors, panelboards, devices, fixtures, etc. to be new and bear the U.L. label or to conform to applicable standards.

Guarantee/Warranty: Contractor guarantees that all work and plant will be free from defects of materials and workmanship for a period of one (1) year from the date of final acceptance. Contractor further agrees that he will replace or repair all defective equipment and installation that become defective during the term of the warranty. This does not include excessive abuse or damage inflected by the owner and/or others.

Manufacturers Directions, Procedures and Operating Instructions: Manufacturers materials, and equipment applied, installed, connected, erected, used, cleaned, and conditioned as per manufacturers directions or recommendations prior to installation.

Installation: All equipment, circuitry, etc. shall be installed as follows or as specified otherwise. The electrical contractor shall verify all nameplate ratings of equipment to be connected and verify electrical compatibility and code compliance. Manufacturer's recommendations shall take precedence unless verified otherwise.

Conductors and Cable: All conductors shall be copper with a weather resistant thermoplastic cover. No branch circuit conductors shall be smaller than #12 unless for low voltage wiring.

Motor Circuits: Motors and circuitry to be installed and connected as indicated on the plan. All motors to be provided with a disconnecting means per the N.E.C. If fractional horsepower motors do not have an integral disconnecting means such as a plug or snap switch, electrical contractor to provide and install an acceptable disconnecting means. Equipment connected with flexible conduit with green jacketed ground wire within conduit-to-conduit system or equipment ground. Connect for correct rotation.

Conduits: PVC schedule 40 acceptable where routed underground. If PVC is used, provide ground wire. Compression couplings in wet locations and in concrete walls and floors. Romex and MC cable are not acceptable.

Outlet Boxes:

Fixture and Special Purpose 4" x 4" x 2 1/8"
Duplex, Switch and Telephone 3" x 2" x 2 3/4"
Special Purpose Outlet 4" x 4" x 2 1/8"

Wire and Cable: Type THHN or THWN for application or as noted otherwise. Color code in accord with the NEC.

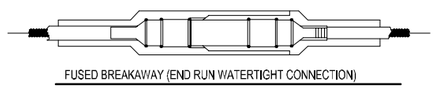
Current Characteristics: 120/240V, 1 phase, 3W

Wiring Devices: Product: Leviton, P&S, Hubbell, and Slater acceptable. Switch and receptacle colors; selected by owner. Devices and finish plates to match in color - no exceptions.

1. Standard switches 20 amps, 277 volt with matching smooth plastic plate. Mount 44" to centerline.
   a. 1 pole Single pole toggle, 20A, Model No. CSB1-20
2. Duplex outlet Nema standard WD 1 and 6, 20 amps, 125 volts grounded Model No. BR20 complete with smooth matching plate. Mount centerline at 18".
3. GFCI receptacle, 20 amp, 125 volt - Model number 6899I with matching plate zinc weather resistant cover where indicated W.P.

Equipment Connections: Electrical contractor to coordinate all work where he is responsible for connecting equipment supplied by others. Verify equipment plug configurations and direct connect or install receptacle to match plug. Verify box mounting heights prior to rough in.

Disconnect and Schedule of Control Equipment: Product of General Electric, Square D, Cutler Hammer, and Westinghouse acceptable. Model, style, etc. as scheduled. Install fuses for disconnects if required and heaters for motor controllers as recommended by motor equipment supplier. Coordinate controls wiring as indicated on the schedule and make allowances there of.



FUSED BREAKAWAY (END RUN WATERTIGHT CONNECTION)

PLUG AND RECEPTACLE SHALL BE HOUSED IN WATER-RESISTANT, SYNTHETIC RUBBER CAPABLE OF BURIAL IN THE GROUND OR INSTALLATION IN SUNLIGHT. EACH HOUSING SHALL PROVIDE A SECTION TO FORM A WATERTIGHT SEAL AROUND THE CABLE AND A SECTION TO PROVIDE A WATER-SEAL BETWEEN THE TWO HOUSINGS AT THE POINT OF DISCONNECTION. EACH KIT SHALL BE SUPPLIED WITH SUFFICIENT SILICONE COMPOUND TO LUBRICATE METAL PARTS AND THE RUBBER HOUSINGS FOR EASY ASSEMBLY.

WHERE INDICATED A COPPER PIN AND A COPPER RECEPTACLE BOTH OF AT LEAST 90% CONDUCTIVITY SHALL BE CRIMPED TO THE CABLE. THE RECEPTACLE SHALL ESTABLISH CONTACT PRESSURE WITH THE PIN THROUGH THE USE OF A COPPER BERYLLIUM SPRING AND SHALL BE EQUIPPED WITH A DISPOSABLE MOUNTING PIN. THE PIN SHALL BE OF AT LEAST HALF-HARD MATERIAL AND THE CRIMPING PORTION SHALL BE FULLY ANNEALED WHILE THE REST OF THE PIN IS MAINTAINED IN ITS ORIGINAL STATE OF HARDNESS. THE RECEPTACLE SHALL BE FULLY ANNEALED. THE PIN AND RECEPTACLE SHALL LOCK TOGETHER SO THE CONNECTION WILL BE MAINTAINED WHEN A MINIMUM FORCE OF 89 NEWTONS TENSION IS APPLIED TO THE ATTACHED CABLES.

1 / E2 WATERTIGHT CONNECTION DETAIL

NO SCALE

MONTANA
SUSAN H. AMES
13872P.E.
LICENSED PROFESSIONAL ENGINEER

S. AMES	MAY 07, 2018						
DRAWN BY:	DATE:						
S. AMES	MAY 07, 2018	REVISED BY:	DATE:	APPROVED BY:	DATE:		
CHECKED BY:	DATE:	S. AMES	MAY 07, 2018				
		APPROVED BY:	DATE:	APPROVED BY:	DATE:		

Montana Fish, Wildlife & Parks

ELECTRICAL PLAN
FREEZEOUT LAKE WMA COLD STORAGE BUILDING
FWP #7179102

AMES ENGINEERING, LLC
815 JADE STREET
HELENA, MT 59602
PHONE/FAX: (406) 458-0494
E-MAIL: susanhames@mt.net

SHEET: E2